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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/998,512	11/30/2001	Minquan Cheng	2001B111	6517

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EXAMINER
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NGUYEN, TAM M

ART UNIT	PAPER NUMBER
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1764

DATE MAILED: 01/22/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

09/998,512

Applicant(s)

CHENG ET AL.

Examiner

Tam M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 05 November 2003.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) 12-15 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
- a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 4/9/2003.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

## **DETAILED ACTION**

### ***Information Disclosure Statement***

The information disclosure statement filed April 9, 2003 fails to comply with 37 CFR 1.98(a)(2), which requires a legible copy of each U.S. and foreign patent; each publication or that portion which caused it to be listed; and all other information or that portion which caused it to be listed. It has been placed in the application file, but the information referred to therein has not been considered. The reference "Encyclopedia of Chemical Technology" page 15, John Wiley & Sons, New York, (1981) is missing from the IDS. Therefore, the reference has not been considered.

### ***Election/Restrictions***

Applicant's election of group I, claims 1-11, in the paper filed on November 05, 2003 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### ***Response to Amendment***

The objection to the drawing is withdrawn by the examiner in view of the new drawing filed on July 16, 2003.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hsia et al. (4,506,106) in view of Kuechler et al. (6,137,022)

Hsia discloses a process for converting an oxygenated hydrocarbon including methanol (MeOH), dimethylether (DME), or the like to produce olefins by contacting the oxygenated hydrocarbon with a catalyst to form an olefin composition comprising water and oxygenated hydrocarbon (e.g., methanol and DME) and cooling and separating the olefin composition into an olefin containing vapor stream and water containing stream. The vapor stream is then compressed and separated into an olefin product and an oxygenated hydrocarbon stream which is

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then combined with the water containing stream to produce a combined stream which is then passed into a separation zone to recover an oxygenated hydrocarbon product. From Figure 2, it appears that the compressed vapor stream is contacted with water from the oxygenates stripper. It is noted that Hsia does not disclose that the catalyst is a molecular sieve catalyst. However, Hsia discloses that the catalyst is a ZSM-5 which is a molecular sieve. (See col. 2, lines 8-24, lines 53-59; col. 3, line 48 through col. 4, line 63; Table I; col. 5, lines 39-68; col. 6, lines 10-43; figure 2)

Claim 1:

Hsia does not disclose that the water containing stream comprises at least 1 wt.% oxygenated hydrocarbon. However, the water containing stream of Hsia contains water and oxygenated hydrocarbon (unreacted feedstock) (see figure 2; col. 4, lines 38-40). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Hsia by operating separator 16 at conditions to produce a water containing stream which contains at least 1 wt. % of oxygenated hydrocarbon (e.g., methanol) because Hsia desires to remove water and all of the unreacted feedstock from the olefin product and it would be expected that the results would be the same or similar when producing a water containing stream comprising at least 1 wt.% of oxygenated hydrocarbon because all of the unreacted feedstock in the water containing stream will be removed in the oxygenated stripper.

Claim 2:

Hsia does not disclose a step for recovering a propylene containing stream. However, Hsia teaches the steps for recovery of an ethylene (also known as ethene) stream and a C<sub>3+</sub>

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stream (See figure 1; col. 5, lines 26-33). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Hsia by separating propylene from the C<sub>3+</sub> stream because one of skill in the art would separate propylene from the C<sub>3+</sub> stream because propylene is a valuable product in a polymerization process.

Claims 3 and 4:

Hsia does not disclose a step of polymerizing the ethylene and propylene containing streams. However, Kuechler teaches that olefin products, which are obtained from a MTO process, can be polymerized (see col. 4, lines 61-65). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Hsia by polymerizing the ethylene and propylene containing streams as taught by Kuechler because the polymerizing step is known in the art and one of skill in the art would polymerize the ethylene and propylene containing streams since polyethylene and polypropylene product can be used in hundreds of applications (e.g., plastics)

Claim 5:

The water containing stream and the oxygenated hydrocarbon containing stream are first combined and then separated in a separator (oxygenated stripper). (See Hsia's figure 2)

Claim 6:

Hsia does not disclose that the water containing stream and the oxygenated hydrocarbon containing stream are both combined and separated within a separator. However, water is separated from oxygenated hydrocarbons in the stripper (see Hsia's figure 2). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was

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made to have modified the process of Hsia by combining and separating the streams within a separator because it would be expected that the results would be the same or similar when either (1) combining the streams within a separator or (2) combining the streams and then separating in a separator because in both cases water is separated from the oxygenated hydrocarbons. If the two streams are mixed within a separator in the process of Hsia, one of skill in the art might use a different separator (e.g., distillation, adsorption, or stripper) which is to be effective to separate water from oxygenated hydrocarbons.

Claim 7:

The vapor stream is compressed at 310 psig (see col. 6, lines 10-11).

Claims 8-11:

Hsia does not disclose that the oxygenated hydrocarbon product contains not greater than 50, 40, 30, or 25 wt. % of water. However, Hsia desires to employ a feedstock which may comprise about 4 to 17 % water. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Hsia by producing an oxygenated hydrocarbon product comprising the claimed amount of water because the oxygenated hydrocarbon product would be combined with the methanol feedstock and Hsia desires a combined feedstock comprising a small amount of water (see col. 3, lines 66-67; col. 4, lines 19-24). Therefore, it would be effective to produce an oxygenated hydrocarbon product containing the claimed amount of water.

*Response to Arguments*

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The argument that the examiner has not established a prima facie case of obviousness over claim 1 because Hsia does not teach separating an olefin product stream and an oxygenated hydrocarbon-containing stream from the compressed vapor stream by contacting the compressed vapor stream with a wash medium selected from the group comprising water and/or methanol and Kuechleer does not teach the use of a wash medium selected from the group comprising water and/or methanol is not persuasive. Hsia discloses that ethylene-rich light hydrocarbon vapor stream is, optionally, compressed in compressor-19 to produce a compressed vapor stream which is then passed into a DME adsorber wherein the compressed vapor is contacted with water from the oxygenates stripper. Therefore, the examiner's position is that the compressed vapor stream is washed with water as claimed. (See Fig. 2, col. 4, lines 40-45)

### *Conclusion*

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.



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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (571) 272-1452.

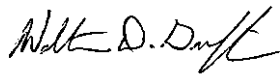
The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Tam M. Nguyen  
Examiner  
Art Unit 1764

TN

  
Walter D. Griffin  
Primary Examiner